

# AMATEUR RADIO



Published in the interests of the Wireless Institute of Australia, Official Organ of all divisions of the W.I.A. and R.A.A.F.W.R.



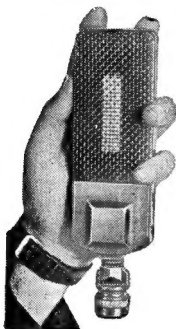
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# AMATEUR RADIO

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Vol 5 No. 6

1st JUNE, 1937.

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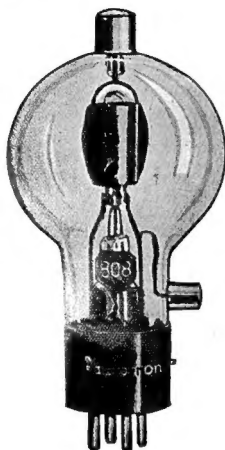
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## The Country Ham

The recent convention at Charlton Victoria brought home very forcibly to us the tremendous value that can accrue from such a function. No matter how enthusiastic and hardworking are the members of an organisation, differences of opinion must arise over matters of policy, administration etc. As we are not all cast in the same mould this is easy to understand, but when the people concerned are not in personal contact, appreciation of the other man's viewpoint becomes correspondingly more difficult. If their environment is different then the gap becomes wider still. In a huge continent such as this, the task of Federal Headquarters to maintain a unified outlook is an unenviable one. From the State viewpoint a closer liaison between Metropolitan and Country Hams must react to the mutual advantage of all. Some States foster this, others for various reasons are not able to, but one fact stands out clearly on this subject, the growth of Ham radio in the country districts over the last few years has been positively amazing and the catering for these men adequately, is inseparable from a successfully run Division.

There can be no doubt, further, that the country men are the cream of Ham radio, they are genuine experimenters, for one reason amongst others, because they HAVE to be. They have no Ham just around the corner from whom they can obtain information at any hour of the day, they have no radio shop at hand from whom they can obtain just the part they require for that new piece of gear. Often the urge to build it is almost gone before the component arrives. They cannot just lift the plate voltage to endeavor to increase excitation that is deficient because of inefficient design, but have to work and strive to get the maximum possible output from, in most cases, a very modest input. Naturally

we are speaking in generalities, ALL country men are not of the type we mention, nor on the other hand are all Town men. Maybe we shall receive abuse for saying so but the average country man does more genuine experimenting in three months than his city counterpart does in a year. That statement is made by one who has experience of both types covering three States of the Commonwealth.

Where is all this getting us? Simply to our original statement that Country Conventions are one of the finest possible means of establishing a necessary understanding between Town and Country members. Not only does it provide a means of interchange of ideas in which the best of the town can be added to the best of the country thoughts, but also many little differences can be straightened out in a few minutes in a manner that two months of letter writing could never do.

One of the finest ways in which a closer liaison can be maintained is through the medium of the RAAF Reserve Wireless Section. Although this organisation is not a WIA section, in Victoria it is totally composed of WIA members and provides a much needed channel for the exchange of Institute ideas. It enables all to be abreast of happenings at all times. Again the Reserve has, as part of its objective, an essential organisation that is not undertaken by the Institute officially and which is, if anything, more a country man's responsibility than the city. That is the establishment and maintenance of an emergency network of stations embracing the State for use in a time of national disaster. Thus although the Reserve is no official part of the WIA it can serve, through the members as a very helpful adjunct and, if for no other reason, should receive the wholehearted support of the Divisional Councils.

This issue is one dedicated to the Country Ham and for that reason we have endeavored to put forward a side of our organisation that receives little publicity, even if everyone feels it is purely a domestic matter.

More power and honor to you, Country Amateur!

## A Regenerative Super

By R. Anderson VK3WY.

When building the receiver to be described the primary objects were selectivity and sensitivity to weak signals. To obtain the selectivity required it was decided that a super of some kind would be necessary.

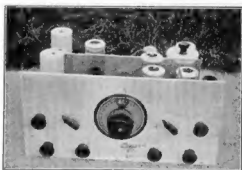
To obtain maximum selectivity from a super two different methods have been widely used. One is by the use of regeneration and the other by the use of a crystal filter. The crystal filter undoubtedly gives the best results but the use of regeneration may be made to give all the selectivity normally required without the financial outlay that a crystal filter entails. Regeneration has the added advantage that it increases the sensitivity very considerably, the limiting factor usually being the noise level.

The final circuit used contains the following stages: regenerative RF stage, regenerative first detector, HF oscillator I.F. stage, second detector, B.F.O., and one stage of audio.

It is, somewhat unusual to use regeneration in both the R.F. and first detector stages and according to the majority of the literature on the subject it is not considered to be very good practice. In this case however actual trial showed it to be decidedly worth while. When the set was first built, regeneration was used in the R.F. stage to obtain sensitivity and in the I.F. stage to give selectivity. Although the selectivity was obtained the regeneration in the I.F. stage brought up the noise level to an extent which definitely lowered the overall sensitivity of the set to weak signals. It is an unfortunate fact that the point of maximum selectivity coincides with the point of maximum noise level. When this regeneration was shifted to the first detector selectivity was not quite so good but was still adequate, while the overall sensitivity of the set was increased. Incidentally it was to avoid a high noise level that a second stage of I.F. was omitted. In practice no difficulty has been experienced in controlling the regeneration provided the stages are reasonably well shielded.

Both stages should be kept below the point of actual oscillation.

It is essential that the panel and chassis should be of fairly heavy guage and sturdily built. It is hopeless to expect stability from a receiver which has a flimsy chassis. Aluminium  $\frac{1}{8}$  inch thick was used for the panel and the chassis is constructed of 16 guage sheet aluminium supported with  $\frac{1}{4}$  inch square brass rod. The panel is 16 inches by 12 inches and the chassis is 15 by 11 by 2 $\frac{1}{2}$  inches. The shield partition between the first



detector and the oscillator is of 16 guage aluminium and runs across the center of the chassis. There is also a shield partition between the R.F. stage and the first detector.

The layout of the chassis travels across the front from right to left and then across the rear section from left to right. The R.F. stage is at the front right hand corner, the first detector at its left and then the first I.F.T. The I.F. tube and the second I.F.T. are at the left rear corner and are followed along the rear of the chassis by the second detector, the oscillator and audio tube and finally in the rear righthand corner the B.F.O.

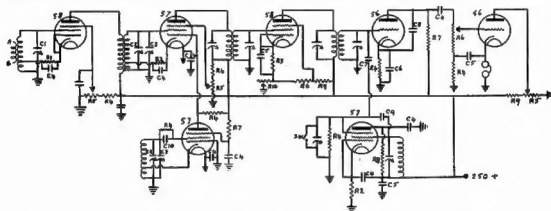
Although there appear to be a rather large number of controls they are no more than are required to get maximum results from a modern set, and in actual operation it will be found that the majority of them only require an occasional touch after they have been once set for the night. The con-

trols on the front panel reading from left to right are: Top row, first detector regeneration, first detector paddler, main tuning control, oscillator paddler, and R.F. stage tuning condenser. The bottom row are audio volume control, I.F. gain control, B.F.O., and R.F. stage regeneration. The audio volume limiter control is situated at the rear of the left side of the chassis.

The R.F. stage uses a type 58 tube and obtains its regeneration by tapping the cathode onto the coil at a point above ground. The tuning con-

siderable positive potential on it, but this has been found to be rather an advantage as it helps the sensitivity of the first detector.

One I.F. stage is used operating at 465 kc. Only one stage was used as it was found that a second stage brought up the noise level more than it brought up the signal. If a crystal filter were used the second stage would undoubtedly be useful. The transformers used are the Radiokies laboratory type. These transformers are litz wound and air tuned. They have proved very satisfactory giving both good gain and



C1—50 m.mfd.  
C2—100 m.mfd.  
C3—20 m.mfd.  
C4—0.01 mfd.  
C5—0.1 mfd.  
C6—0.5 mfd.  
C7—See text.

C8—0.002 mfd.  
C9—0.00025 mfd.  
C10—0.0001 mfd.  
R1—1000 ohms.  
R2—2000 ohms.  
R3—300 ohms.  
R4—50,000 ohms.

R5—50,000 ohms pot.  
R6—500,000 ohms.  
R7—100,000 ohms.  
R8—25,000 ohms.  
R9—20,000 ohms.  
R10—2000 ohms.

Band.	R.F. Stage Turns. Tap.	1st Detector. Turns. Tap.	Oscillator. Turns. Tap.
28 MC	4 1	4 1	4 1
14 MC	10 1	9 1	8 2
7 MC	20 1	18 1	17 5
3.5 MC	36 1	36 1	35 6

All coils are wound on 1½-inch formers, and taps shown are the number of turns from ground.

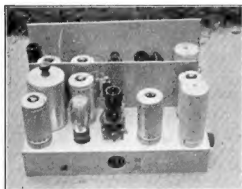
denser for this stage is not ganged with the oscillator and first detector condensers but a 50 mmfd is used for separate tuning of the stage. In practice it is found that the condenser may be set for the center of the band and then only requires slight adjustment to peak a signal anywhere in the band. This stage is inductively coupled to the first detector which uses a type 57 regeneration for this stage is obtained in a similar manner to the R.F. stage. The plate of the oscillator is coupled directly to the suppressor of the first detector. This means that the suppressor must be worked with a con-

selectivity. These could be replaced with iron core type transformers provided they are designed to match the tubes and to give good selectivity. A 2000 ohm variable resistor is used in the cathode circuit of this stage to provide an I.F. gain control.

The second detector uses a type 56 as a power detector and the B.F.O. is coupled to the grid of this detector through a small condenser consisting of two copper plates each a quarter inch square and separated about 1/16 inch. This gives a very small capacity but it is found that very loose coupling

of the B.F.O. to the second detector aids the reception of weak signals. The B.F.O. uses a type 57 as a "relaxation" type of oscillator. This is a very stable oscillator and gives less harmonics than the usual E.C. oscillator. The whole of the B.F.O. stage should be carefully shielded so that the only coupling to the rest of the receiver is through the small coupling condenser.

One stage of audio follows the second detector. This stage uses a type 56. The input to the stage is fed from a 500,000 ohm potentiometer which acts as an audio volume control. The plate voltage to the audio tube may be varied by a 50,000 ohm potentiometer which



acts as a volume limiter and is very helpful in the reduction of car QRM. (see articles by VK3YP in Amateur Radio for November, 1936).

When lining up this receiver the regeneration controls should be turned well back. If possible a modulated oscillator should be used to assist in lining up but if this is not available the set should be hooked to a large antenna and the I.F.T.'s tuned for maximum noise level. The front end of the set can be lined up either from a steady incoming signal or from the station frequency meter.

If care is taken in the construction of the set it will be found to have an excellent signal to noise level ratio and to have excellent weak signal sensitivity.

## Attempt on 56 MC Record

The introduction of 56 mc activities to many of the country stations in Victoria on the King's Birthday week-end (14th June) will be celebrated by a demonstration at VK3HL's at Callawadda and VK3RH's at Glenorchy, by VK3ML and VK3UK. Vast interest was taken in the talks given by the city boys at the recent country convention on the possibilities of this band, and an invitation was immediately extended to the visitors to display their gear and show just what could be done in the bush.

Serving this purpose, and at the same time offering possibilities for record-smashing, a crew of city fellows will leave Melbourne on 11th June, and operate with the following schedules throughout the week-end. All times are E.S.T.:—

June 12th: 1400-1800.  
2000-2200.

June 13th: 0900-1200.  
1400-1800  
2000-2200

June 14th: 0900-1200.

Being in line with Melbourne and Adelaide, Callawadda presents an opportunity for 5-metre enthusiasts in both States to put a signal out over the present 100-mile range, and with the close co-operation of both parties something should eventuate. Rotating Bruce aerials are to be used, with powers up to 25 watts input. Phone and ICW will be employed in conjunction with superhet receivers. All States are invited to co-operate whenever possible, and any further particulars can be obtained from VK3ML & VK3UK

A recent issue of the Kerang (Vic.) "New Times" contained the following gem:—

### Apex Dinner.

"The harmony was supplied by Mr. Ken Rankin with his recently constructed high fidelity gramophone amplifier, which is capable of an output of 20 watts of undisturbed volume."

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## Five Metre Aerials

(By E. B. Ferguson, VK2BP.)

For those of the "hams" who are still experimenters, the ultra high frequencies provide an admirable outlet for their activities.

The gradual exodus from 200 metres to the present day frequency bands has been filled with interest. Perhaps the greatest interest to-day rests with "Five and Below."

There are many who say practical communication over any distance is not feasible; others will assert that high power is necessary, and still others cannot be bothered with anything else but QSL cards and DX, but, for all this, many interesting facts have been established.

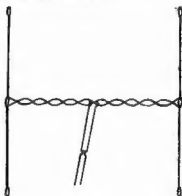
For all our enthusiasm, the "addicts" in the various parts of Australia learn little of the doings of their fellows in the other States. This is rather a pity, as, if all our ideas and the results of our experiments, etc., were made known to each other per medium of such a magazine as "Amateur Radio," our rather vague knowledge of the ultra highs would be greatly advanced. With this in view, this article is intended to make known a few of the discoveries relating to some of the antenna systems used at VK2BP in days gone by.

When 5 metres was first investigated by the writer, results were very disappointing, mainly because insufficient thought was given to the antenna system. After many unsuccessful attempts were made to contact Sydney stations, of which there were but three or four, 5 metres was "put on the shelf." Perhaps it is as well here to mention that VK2BP was situated 48 miles west of Sydney, and at an elevation of almost 3000 feet, with a clear uninterrupted view of the city and its environs.

One evening, on returning home from work, a message was received to the effect that a party, including 2NO and 2WD, had heard Syd-

ney stations on 5 metres outside the shack. At about this time details were available regarding directional aerials as used in America, so it was decided to erect a similar array. Success was immediate. The first two-way circuit over any distance in Australia became an established fact. From then on 5 metres became an almost exclusive amateur interest for the writer.

Our early experiments definitely showed us that the aerial system was by far the most important factor in communication over any distance, and so I decided to concentrate more on the "Sky Wire" than the other essential apparatus.



*Fig. 1*

A certain degree of efficiency may be obtained with tuned feeders; but from results obtained it was definitely established that far greater antenna power could be obtained for a given input when using untuned transmission lines between the transmitter and the antenna array, and so the idea of tuned feeders was put to one side after a primary test.

Without delving into technicalities, the following is a brief resume of the various types of aerials tried:—

The first successful contact with 2NO was obtained with an array having four vertical radiators half wave apart, backed by four reflectors. The feed system was the conventional two-wire tuned arrangement, and the transmitter consisted of a single 46

type tube in a TNT circuit, with 12 watts input. The first report from 2NO Sydney was R7. 2NO had a similar array in operation, and his signals were an excellent R8 whilst using the beam antenna for reception at 2BP, and only R4 on a single dipole antenna. Later, when a T.P.T.G. Push-pull transmitter was installed, and the power raised to 25 watts, the best report obtained from Sydney was R8 with this array.

This eight wire beam was rather bulky, and could not be erected conveniently in every back yard, so it was decided to try out other types taking up less space.

Fig. 1 illustrates a very efficient type of antenna, which compares very favourably with larger arrays fed in the conventional two wire tuned manner. An antenna of this type is in use at 2NO, and excellent results are obtained therefrom. At a recent field day, held in N.S.W., 2NO was heard at R8 by portable equipment operated by 2ZC, well over 100 miles away. The only other station to be heard by 2ZC was 2EM, who was using a "Bruce" type array. (More about the Bruce later.)

Fig 1 represents two vertical dipoles spaced half wave apart. These two dipoles are connected together at their centres by a twisted pair line. The feeders are then attached to the centre point of this twisted pair. The feeders are untuned, and consist of an ordinary transposed line as used in doublet antenna. An important item to watch when erecting this array is the connection of the twisted pair between the radiators. If the two top halves of the antenna are connected together by one leg of the twisted pair, and the two bottom sections connected by the other leg, the directional properties of the antenna will be effected so that radiation takes place at right angles to the plane of the array. If, on the other hand, the top sections are connected to the opposite bottom sections as in Fig. 1, the direction of radiation will be in a line with the array as shown by the arrow. Greater gain is obtainable with this connection. In actual practice this has been proved to be about 80 per cent. as efficient as the large eight wire beam antenna previously mentioned. The method of connecting the feeders to

the transmitter may be by the use of a single turn loop at the point of lowest R.F. potential in the tank coil, or by clipping the feeders directly on to the tank itself. Or, if a resonant line transmitter is in use, the feeders may be tapped on to the plate lines at a suitable place, which imposes a correct load on the transmitter. The point of maximum R.F. transfer must be determined by experiment. Starting an inch or so each side of the centre tap of the tank coil, the feeders may be worked outwards until maximum antenna power is obtained for a given input.

Fig. 2 illustrates the methods of coupling. That shown at "b" appears to be more versatile than "a," as provision is made to place the correct impedance across the tank coil.

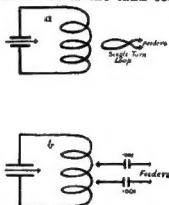


Fig. 2

Perhaps the most efficient of the smaller types of arrays experimented with is that shown in Fig. 3. This consists of two vertical radiators R spaced half wave apart and backed by two reflectors R1 spaced a quarter wave behind the radiators. The feeders between the radiators are transposed mid-way between, and are continued a quarter wave beyond one of the radiators to form the stub line, or linear matching transformer S. This stub is shorted at the outside extremity by the shunting bar B. The feeders F are untuned, and should have an impedance of approximately 600 ohms. A convenient line may be constructed of No. 14 s.w.g wire spaced  $4\frac{1}{2}$  inches, or No. 12 wire spaced 6 inches. The point of attachment of the feeders to the stub line will vary with the impedance of the feed line, which may not be exactly 600 ohms. If the half wave radiators are exactly 8 ft. long, the spacing between them will be 8 ft.,

the length of the reflectors will be 8 ft. 4 in., and they will be spaced from the radiators a distance of 4 ft. 1 in. The length of the stub line will be 4 ft., and the feeders, if exactly 600 ohms, will be attached one foot and half an inch from the shorted end of the stub line. However, an absorption wave-meter attached to the centre of one of the

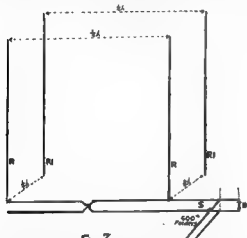


Fig. 3.

radiators will be a good guide when ascertaining the correct point of attachment for the feeders. Maximum brilliance in the wave-meter indicating the correct position.

This array, when properly adjusted, gave better results than the big 8-wire uni-directional beam with tuned feeders. With 25 watts input, a wave-meter could be made to glow when held a foot away from one of the radiators. At a conservative estimate, the actual gain of this array would be about 5 db.

A single radiator and reflector, as in Fig 4, fed in the same manner, has a gain of about 2 db. This is most convenient to erect, and is far more efficient than the single dipoles, doublets and Pickards one notices in the average back yard.

The last, and perhaps the most versatile, array to be tested at 2BP was the Bruce type. Although the adjustment of this system is not simple, results are well worth the time spent.

Fig. 5 illustrates the antenna. The sections (a) are each quarter wave long, and sections (b) one-eighth wave long, plus 5%. That is, if the theoretical length of a half wave

section be 8 ft., the actual length of a half wave section of the Bruce will be 8 ft. 5 in., or 4 ft. 2½ in. each quarter wave section, as shown at "a." The feeders should be of the Matched impedance type, preferably 600 ohms. One feeder is attached directly on to the centre point of the antenna, and the other feeder is for the moment left free. The stub or matching line is a pair of parallel wires spaced the same as the feeders, and of the same gauge wire. The length of this stub should be 4 ft. 6 in., and it is supplied with a shorting bar which can be moved along the wires of the stub whilst maintaining contact with them.

To adjust the array, an absorption wave-meter or field strength meter is essential. If using the absorption meter attach it at a centre point of one of the vertical sections. Next attach the free feeder to the centre point of one of the stub lines by a clip or some arrangement easily adjusted, then similarly attach the other leg of the stub line to the centre point of the antenna, where one of the feeders is also connected, then clip on the shorting bar across one of the ends of the stub line (see diagram). Switch on the transmitter, and note the antenna radiation



Fig. 4.

as shown by the wave-meter. The next step is to move the shorting bar further toward the centre point, at the same time noting any difference in the wave-meter. If it becomes duller as the shorting bar is moved, return it to the end of the stub and make the point of attachment of the stub lines to the antenna and feeders a few inches off centre toward the open end, then again slide the shorting bar toward the centre. If the antenna and feeders are still attached too near the centre point of the stub line, the pea lamp

will again tend to become duller. If, however, the correct position has been arrived at, the lamp will glow brighter at one setting of the shorting bar. It can now be assumed a near match has been obtained. With the apparatus at VK2BP, it was found that the stub was attached 6 inches off centre toward the open end, and the shorting bar was  $3\frac{1}{2}$  inches from the other end of the stub line.

After obtaining this "near match," the transmitter should be adjusted

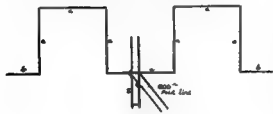


Fig. 5



for maximum output, as shown by the wave-meter in the aerial field, not by maximum feeder current. After this, the shorting bar should again be adjusted for maximum output and the array can be considered matched up. The Bruce, if properly constructed and matched up, will have a gain in excess of 6 db. in two directions, with a radiation pattern covering about 30 degrees both before and behind the array. With this array, stations inaudible on an aerial, as in Fig 4, were QSA5 at 2BP, which brings us to receiving practice.

Attention should be paid to antenna coupling to the receiver just the same as coupling the transmitter. Fig. 6 illustrates a highly efficient coupler, which can be adapted to any receiver and any antenna. The essential parts of this coupler are two

five or six inch single turn coils, one of which is parallel tuned by a 5-plate midget condenser, as shown in the diagram. This coil may be No. 14 gauge wire, and the other coil may be made from "hook-up" wire tied with cotton to the first coil right round its circumference. The two ends of this second coil are twisted together for about 6 inches, and one end of this line is coupled directly to the grid circuit of the R.F. or detector tube through a small trimmer condenser. The other end of the line is left free. The adjustment is quite simple, and may be done as follows:—

The antenna tuning condenser C is left at its minimum setting, and the "live" feeder is attached to the stator plates of C. Next tune in a station in the ordinary manner, and then increase the capacity of C until perhaps the detector is pulled out of oscillation, in which case the capacity

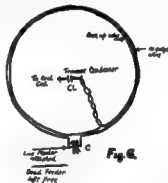


Fig. 6

of the trimmer condenser C1 must be decreased to a position where the detector will oscillate over the whole of the scale of C. When this state is arrived at the antenna may be tuned to resonance with the received signal, and a decided increase in signal strength will be noticed at a certain point when the condenser C is rotated.

If an R.F. stage is used, the coupling may be made much tighter than if the tuning loops are coupled to a detector.

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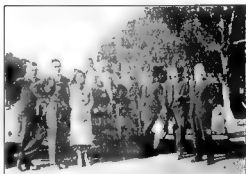
## Country Convention at Charlton, Vic.

By Vaughan E. Marshall VK3UK

The average Ham requires very little excuse to stage a "get-together," but the Convention at Charlton, Victoria on May 1st had a very sound reason for its organisation. Murray Orr VK3OR had announced his intention of taking unto himself a wife and so his fellow country Hams made that event the very good and very happy excuse for staging a "get-together." And what a function it proved to be! For once the eager anticipation was far exceeded by the realisation. Two cars went up from Melbourne, 3ML and 3WG with 3UK and 3BQ with 3YP. On arrival at Charlton a crowd of over thirty Country Hams and second Ops was greeted, some of whom had journeyed nearly 200 miles to be present. If one needed any practical expression of the Ham Spirit that, in itself, should have been enough, but the whole occasion, the feeling of camaraderie, the sincerity of the toasts and the spontaneous enthusiasm with which the whole proceedings were gone through made one deeply conscious that one was privileged to be a Ham.

The arrangements were in the hands of Ken. Rankin, VK3KR R. E. Trebilcock, VK3TL and Tom Hogan, VK3HX. The smooth manner in which every part of the function was carried through was a tribute to their capable organisation. On the Saturday afternoon 3HX's mother provided refreshments for any who desired them (and that meant everyone!) and then at about 6 p.m. all went around to Flockhart's Hotel, where the dinner was to be held. During the few minutes after a tidy up and awaiting dinner it was a unique opportunity to stand in the Hall and look around the gathering. How often many of us have awaited some function standing among people we either knew only slightly or not at all and felt the wait interminable. Here how different, although some had never met, some had not met for many months there was no barrier of reserve to be broken down, all had one great thing in common and through the hub-bub of conversation could be picked out such words as 6L6's, Diamond

antenna, DX, 28 mc. Ham radio is no respecter of person or station in life, one is a Ham, that is sufficient. But it is an occasion such as this that one has brought home so clearly what a grand Hobby ours is.



3OW, 3WG, 3HQ, 3HL, 3HM, 3UK, 3HG.  
3BQ, 3ML. Back Row 3RM, 3YP

Tom Hogan 3HX, on whom the Charlton end of the arrangements had fallen was appropriately made Chairman and proved as capable in that position as he had as an organiser. He had had printed the Menu and Toast list in an attractive manner and, with the autographs of all present on the back, will serve as a grand remembrance in the years to come of a wonderful evening. As the central decoration in the Dining room a large WIA badge, in colors, was above the Guest of Honor's head. All the visitors were standing at their places before Murray Orr appeared and he entered to the strains of "For he's a jolly good fellow" with E. Perkin VK3EP supplying the piano accompaniment. An excellent dinner was concluded before the comprehensive Toast list was "broken into" After the Toast of the King was honored E. Perkin 3EP proposed the Toast of the WIA. He explained the Countryman's attitude to the Institute, how everyone of them realised the necessity of being a member and, sensibly, took the opportunity of suggesting some ways in which the Institute could better help them in return. Bill Gronow 3WG, the Vic. Div. President responded and after thanking the Organisers for enabling the Melbourne Hams to be represented he explained the Council's

attitude to the various points brought up. He emphasised how ideal the occasion was for gaining a greater appreciation of the country members needs and hoped that the Convention would become a regular event. He explained something of the inner workings of the Magazine and how dependent each issue was on the Hams themselves, for the quality of the material within the pages.

The next contribution to the evening's entertainment was a talk by Max Howden 3BQ on 28 mc work. He pointed out many reasons for the failure of some Hams to achieve good results. He gave examples of the comparative results that could be expected with different types of antennae and made a plea for continuous activity throughout the winter months in order to dispel the 28 mc "close period" bogey.

Then came the hilarious item of the presentation to Murray Orr of the Universal Exciter, a detailed description of which will be found in this issue. This was in the hands of Vin. Trebilcock, 2nd Op at 3TL, and Ken. Rankin 3KR. The serious manner in which Vin. put over the description made even finer an extraordinarily clever piece of work and all credit must be given to the authors. It will be remembered when many other incidents of the great night will have been forgotten.

The RAAF Reserve Wireless Section was the next Tcast and it was proposed by Ken. Rankin 3KR. He expressed his delight at having the opportunity of speaking of the organisation of which he was so proud to have belonged. He illustrated the value of the Reserve to Hams in increasing their operating ability by stating how easy it was, during an ordinary Ham QSO, to tell if the other Ham was a Reserve member. From his personal experience he could recommend the Reserve to every Ham. Vaughan Marshall 3UK replied on behalf of the Reserve and said that a member would gain in ability naturally as he worked in the Reserve. That was one of the returns for his work. However a man would not be a first class member unless he held ever before him the ideal for which the Reserve stood, of Service to his Country through his Hobby.

There were two objectives behind this ideal of service. Firstly to train

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ourselves as RAAF W/T operators and secondly that our organisation would form an emergency communication system in a time of National disaster such as a Flood or Cyclone. Those objectives were worthy of every man's wholehearted effort.

Max. Howden 3BQ, who had brought his flute with him then rendered two items, accompanied by E. Perkins 3EP on the piano with Vin. Trebilcock acting as a human music stand in the absence of the real article. These items were followed by a brief talk on Noise Suppression Tubes by C. I. Patterson 3YP.

The Chairman wisely coupled the presentations to Murray Orr with the Toast. Vaughan Marshall 3UK presented him with two Silver Entree Dishes on behalf of the 3rd District of the RAAF Reserve Wireless Section and outlined Murray's life in the Reserve which extended back to its earliest days. His remarks were ably seconded by R. H. Cunningham 3ML. R. E. Trebilcock 3TL presented him with a leather armchair on behalf of the country Hams and also a present for his future wife, "given in the Spirit of brotherhood which unites the Knights of the key." He said Murray was one of the old timers and had always been one of the most active Hams. He was delighted as the oldest Ham present to be able to make the presentation on behalf of them all and to convey their very best wishes for his future happiness. Alan Hutchings 3HL proposed the Toast of the Guest of Honor and said in all respects Murray typified all that is best in a Ham. He was interested in all phases of the game and was always only too willing to help newcomers over the hurdles in their first few months on the air. He congratulated him on the step he was taking and wished him the very best of luck.

Murray Orr was greeted with prolonged applause and it was some time before he was able to speak. "This is one of the most memorable nights of my life," he said. Taking the speakers in the order in which they had spoken was the only way in which he could hope to express any thanks for all the nice things that had been said about him. "Regarding the Reserve, I can assure all members that I have got considerably more out of my association with it than I have ever put into it and I am, and always will be, proud

to belong to the organisation which, truly, contains the cream of Ham Radio. It is difficult to thank everyone for having come such long distances just to be present for this night," he went on, "Ham Radio indeed was a wonderful bond to make men drive hundreds of miles to honor such an occasion and this chair which you have given me will ever remind me of you fellows. It will have the place of importance in my shack so that it will for ever be a constant reminder of what you have done for me tonight. In particular I want to thank those who made this evening what it has been, especially 3HX. I had an idea that something was in the wind but never imagined anything like this. My thanks also to 3KR, 3EP, 3TL and 3UK. 3HL's proposal of the Toast was particularly apt as, next to 3KR, he is my oldest Ham friend. I find it impossible to try and thank you all but can assure you that my future wife and myself will always be delighted to see any of you whenever you are able to get up to Lake Meran."

A flashlight of the crowd, was then taken with the Guest of Honor seated in the centre in the armchair. R. H. Cunningham then gave an interesting talk on exciter units, everyone's appreciation being shown by the number of questions asked him at the conclusion. He emphasised the use of good RF chokes, the value of the new Beam type tubes, the fact that a big drive was not only handy but essential because of the rise in losses and drop in efficiency as frequency was increased and finally suggested the ideal combination for average use was 6L6 as a Tritet followed by 807 as Buffer/doubler.

The Toast of the Country Hams was proposed by Max. Howden 3BQ. He said that he had had the pleasure of visiting most of the older Ham's shacks in the country and the fact that stood out above all others in connection with their work was the ingenuity that all displayed in getting the maximum possible output from their very limited input. R. C. McNally responded and declared that one of the finest points of the Convention from his point of view was the fact that he had been able to meet so many men whose sign he had known before. H. Brown 3NN reported in his remarks by F. W. Hart 3WN and H. Brown 3NN.

The return toast of the City Hams was proposed by I. R. Hodder, 3RH. "This night has been such a wonderful one," he said, "that it seems impossible that we should have to wait another happy event such as this, in order to stage another." It was a coincidence that eleven years ago to the very night he himself had been married and he trusted that Murray would have the same happiness that he had experienced. After honoring the Toast of "the fraternal relations of the city and country Hams," R. H. Cunningham was called on to reply. He told how he had looked forward to this, his first Country Convention, and said that he looked on them as the cream of the experimenters. On behalf of the City Hams he expressed their appreciation for the opportunity afforded them to be present.

The Chairman suggested that a definite social side of our Hobby should be fostered and almost before he could sit down, amid applause, Murray Orr, 3OR had moved and C. I. Patteson, 3YP had seconded a motion that the present organisers be called upon to run another such Convention. The motion was carried with acclamation.

Murray Orr, 3OR then proposed the Toast of the Chairman. In reply Tom Hogan, 3HX said that he appreciated the remarks made but that without the able assistance of his co-organisers the night could not have been as good as it undoubtedly had been.

Just before the evening concluded Vaughan Marshall presented the Crack Station Cup to Alan Hutchings, 3HL. Each year the Trophy which he donated for annual Reserve Competition was handed on to its successor and a Cup is presented to its former holder as a permanent memento of his win.

The party then broke up and some of the Hams left immediately for home, the remainder went around to 3HX's shack and worked some of the boys who had not been able to be present and gave them a detailed account of all that had happened. Next morning after many photographs, they departed in two parties, 3ML, 3WG, 3BQ, 3YP, 3HG, 3OW and 3UK going to Callawadda to 3HL's for lunch and most of the remainder going towards Kerang.

It certainly was a memorable occasion and one that will be long remembered. The hope of everyone that was present is that it will not be long before it is repeated.

## Station Description

### 3HX

Owned and operated by T. D. Hogan, VK3HX is located in Charlton, in the central north-west of Victoria, a town blessed or cursed with a D.C. supply. Although only licensed in 1935, a progressive policy has been maintained.

Starting off with a TNT oscillator, with 10 watts input, the transmitter has progressed to a multi-stage crystal controlled rig. Most of the work has been done on low power fone, with excellent results.

The rig pictured in the foto was the low power rig, and consisted of a 53 Jones Exciter on the middle rack, which was link coupled to an E406,



plate modulated with an input of 1 watts, with which consistent fone was worked with ZL. The top panel is the antenna tuning unit, with provision for switching from parallel to series tuning.

Considerable experiment has been made in the receiver line, and the one pictured in the foto is a 4-tube TRF, but at the moment a super is being considered.

The xmitter at present is a 53 Jones Exciter, 45 buffer, link coupled to a 6P6, which is link coupled to a half-wave 30 metre Zepp. The input to the final on fone is up to 20 watts, and on Cw anything up to 40 watts if necessary. The 6P6 is suppressor Grid modulated, and the power supply for the rig is drawn from a rotary converter.

14., 7, and 3-5 mc bands have been the hunting ground of 3HX, although he likes 3.5 mc best. Xtal frequency 3564 or 3685 kc.



## The Universal Exciter

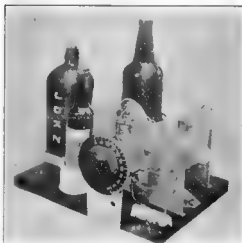
A Unique Three Stage Rig Using Well  
Known "Bottles."

(The universal exciter described below was presented to Murray Orr during the dinner at Charlton. The presentation was one of the cleverest we have ever witnessed and will warrant it will be a cause for merriment for many a day amongst those fortunate enough to have been there. Each stage was assembled and described one by one thus sustaining the farce and causing continuous laughter right to the end. —Ed.)

**The Oscillator.** This (indicating a gin bottle) is the L4U type and is an excellent Master Oscillator. It may be either sensibly excited or crystal (tumbler) controlled. Its frequency is variable as far as KC's and other celebrities are concerned, but usually several times a day. This bottle cannot be too highly rated as an exciter. The Jones exciter is well known but this is a Smith, Brown, Robinson exciter in fact a universal exciter. You are cautioned not to over-excite from this stage as it may lead to general instability of the rig. By abusing it many fine crystals have been shattered. Therefore resistance is recommended in the input circuit to limit the flow. When using this bottle as an amplifier the best method of coupling is from the condenser of the distiller. This bottle is ideal for the buffer stage, thus it is most frequently used by the more elderly Hams.

**The Doubler.** The next bottle (a lager bottle) is known as the IC2 type and is an efficient doubler, in fact if properly used you can actually see double by using it. Its doubling efficiency is also increased by the harmonic distortion which you have probably noticed in the users voices and

through the fact that it is extremely easy to operate off the straight line characteristic. This bottle is more often used as a doubler than the first as it is less expensive and easier to obtain. It is interesting to note that bottles of similar type are now on the market in U.S.A. The elements however, are of weaker construction than the former but when run at full strength the p(a)late does not exhibit that degree of heat as the former type. It is necessary to keep the elements



cool otherwise there is an emission of gas and the bottle emission falls off. Thus thermostatic control is advisable.

Now for the tank circuit. Some amateurs have better tanks than others, and it should be noted that a fairly good capacity is desirable as it assists stability and prevents the tendency to go off into self oscillation.

However too large a capacity must be guarded against when the bottle is

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required as a doubler. According to the advertised rating of a bottle of similar type the frequency is one at eleven. That applies to single phase operation, but if you recognise two or three it is usual to shout for them. Too much shouting should be guarded against as it results in heavy side bands frequency flutter and other undesirable instability as well as being apt to cause interference to others. One final point should be mentioned. Neutralization is desirable and this method (peppermints) is cheap and always effective.

This brings us to the third bottle which of course is given to you in anticipation of your getting a licence. We appropriately show this bottle in the final stage as it is often sadly true that it is the last bottle used. But it were better than that the married Ham were driven to excessive use of the first two. We therefore hope that you will use all three in modulation. In this stage the amplification is usually three or four but in Italy and Germany a higher ratio is advocated. As to the bottle itself, it is the most reliable of all, it works when all others fail. It has certain unique characteristics, for instance an external heater, because for best results the operating temperature should be close to 98° F. Apart from that the construction is ideal as the only element in the bottle is the emitting material, the white coating which is always associated with this type. In accordance with modern practice this element is replaceable so that the bottle can be used time and time again. Every care is taken to strain out filaments as these, paradoxically retard emission. No grids or plates or other culinary utensils are required so there is no plate dissipation and no 'eating. However several precautions are necessary for the correct operation of this bottle, which incidentally is known as the 1TT type. The frequency must be carefully regulated by attention to the watt hour meter and the current rating should be carefully adhered to. Observation of those points will completely eliminate howling in this stage. The bottle is equipped for single hole mounting but some auxiliary support is usually necessary. The output is closely coupled and end fed.

The last section to be described is the power supply. This is one of the

blue type rectifiers (castor oil bottle). This type used to be referred to as a B eliminator, but with more modern devices that term is dropping out of use. However whether you regard it as a rectifier or an eliminator it will certainly live up to its name. It is, to a large extent a corrective to the faulty use of the other bottles, and there are good reasons for choosing this old type of rectifier to the exclusion of many more modern makes. The main reason for its effectiveness is that the transformer is in oil.

## TRANSMISSION SCHEDULES. June, 1937.

**VK2ME, SYDNEY.**  
Wave-length, 31.28 Metres  
(9590 K/Cs.).  
Sydney Time. G.M.T.  
Sundays: 3 p.m.-5 p.m. 0500-0700  
" 8 p.m.-Mtd. 1000-1400  
Mondays: 2.30 a.m.-4.30 a.m. 1630-1830

**VK3ME, MELBOURNE.**  
Wave-length, 31.5 Metres  
(9510 K/Cs.).  
Melbourne Time. G.M.T.  
Nightly,  
Monday to 7 p.m.-10 p.m. 0900-1200  
Saturday  
(inclusive)

**VK6ME, PERTH.**  
Wave-length, 31.28 Metres  
(9590 K/Cs.).  
Perth Time. G.M.T.  
Nightly,  
Monday to 7 p.m.-9 p.m. 1100-1300  
Saturday  
(inclusive)

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## R.A.A.F. Wireless Reserve Notes

Officer Commanding: Flying Officer R. H. Cunningham, 397 High Street, Glen Iris, S.E.6, Victoria (VK3ML).

District Commanders—

Second District, N.S.W.—A. G. Henry, Clareville Avenue, Sandringham (VK2ZK).

Third District, Victoria—Pilot Officer V. E. Marshall, 3 Myrtle Avenue, Kew (VK3UK).

Fourth District, Queensland—A. E. Walk, Sandgate Road, Nundah (VK4AW).

Fifth District, South Australia—F. M. Gray, 52 Ormond Grove, Toorak Gardens (VK5SU).

Sixth District, West Australia—J. Mead, 111 Gerrard St., East Victoria Park, W.A. (VK6LJ).

Seventh District, Tasmania—R. Cannon, Goldie Street, Wynyard (VK7RO).

### R.A.A.F. RESERVE THIRD DISTRICT NOTES.

(3Z1-VK3UK)

As a number of our members have been on schedule consistently each week for nearly seven years, I suggested that some might care to have a three months spell. In view of the fact that the new scheme should be in operation within that time, all would want to be right on the spot then, so a spell now might make them fresh and keen. Not one member of VMC would avail himself of the chance for a spell though and many said that they felt apart from anything else, that they would not know what to do with their Sunday mornings if they were not on schedule. The result of the suggestion is an outstanding example of the spirit which is present in the District and it makes one feel very proud to belong to an organisation whose members work with such energy and sincerity.

The Convention at Charlton was attended by Reserve members from all parts of the State. In fact everywhere one looked the familiar Reserve badge could be seen. Unfortunately there was so much to be done in the short time available that there was very little time for any discussion of Reserve matters. We were delighted to have the opportunity to present to 3C4 a pair of Silver Entree dishes as a wedding present from the District. At the dinner also we were able to present to 3C3 the Cup which he was entitled to as the holder of the Crack station Trophy for the previous year.

Next month 1A1 and 3Z1 are going up to 3C3 and 3F9 for the King's birth-

day weekend and endeavor to make contact with VIM, VIS or VIA on 56 mc.

Each of us will be taking Super Het receivers, a stable transmitter, Class B modulated, and some form of beam antenna. I have felt, and have mentioned in these pages on numerous occasions, that the Western and Northern members have a unique chance for 56 mc work and I hope that it will not be so very long before we have 56 mc R/T sections operating throughout the Western and Northern districts.

During the coming weeks whilst still awaiting the improvement of conditions, we will be introducing many new features of interest into the schedules including abbreviated procedure exhibitions and cypher speed tests.

During the last month I have had over a dozen requests for enlistment but unfortunately can not accept any further members at the moment. It will be impossible to train any new men until the commencement of the new scheme, but then I hope we will be able to take another eighteen. Thus if any Ham in Victoria would like to join up and writes to me, his application will receive priority according to the date of his application. The only exception to this rule is in the case of a man whose location is in a key position in the state that is not already covered.

FLASH!! Just as we pulled this page out of our typewriter news came through of the arrival of a junior YL

(Continued on page 28)

## Federal and Victorian QSL Bureau

(By R. E. Jones, VK3RJ, QSL Manager.)

Parker Shipley, 5339, No. 25 Avenue, Omaha, Nebraska, U.S.A., is forming a club for boys interested in amateur radio. The age limit is 25 years.

A special Coronation QSL card worthy of pride of place on any patriot's wall is being issued by E. W. Brambleby, XU8CB, the QSL manager of the I.A.R.A.C.

G6WY desires a card from the following VK3 stations:—BX, DX, HT, RW, WX and XI. His chance seems to be very remote.

A new Amateur Society in France styles itself "Radio Liberte," with address 5 Avenue de la Republique, Paris XI. Some European countries apparently endeavour to mix politics with amateur radio.

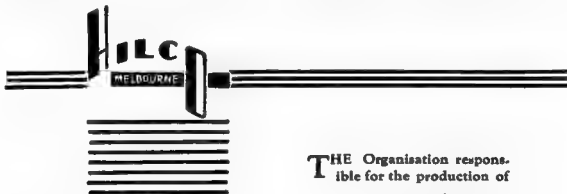
VK3SG will be temporarily located in Central Australia, with the call sign VK8DA, and solicits contacts on 7190 KC.

Victorian hams were pleased to

meet Merv. Conway, VK7CL, who spent a few days in VIM early in May. Other interesting visitors to Melbourne were VK3QB and his YF, from Maffra. Maffra is destined to have its share of amateur enthusiasm with the recent licensing of VK3QB and VK3SS.

Dave Duff, VK3EO, ex-2EO, expects to leave on his postponed cruise on H.M.A.S. Sydney about 12th July. His amateur movements from that date are a little obscure.

Cards are on hand at this Bureau, 23 Landale Street, Box Hill, for the following Victorian stations:—AD, AH, AP, AT, AX, BS, BV, CA, CU, CW, CX, DJ, DT, DZ, ES, FA, FB, FG, FT, FZ, GA, GB, GJ, GO, JA, JC, JE, JL, KO, KP, KY, LI, LQ, LY, NA, NB, NG, NS, OI, OX, OZ, PA, PC, PH, QX, RL, RM, RQ, RT, SA, SE, SG, SM, ST, TS, TC, TG, TQ, UN, UF, VK, XG, XU, YG, ZC, ZG, ZL, ZW, Ballarat, Howard, VKCEN.



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## 28 and 56 M.C. Notes

(By A. Pritchard, VK3CP.)

Conditions on 10 mx have not been so good, although these last two weeks have shown a decided improvement with sigs. from the States, being practically up to normal again. There are several new sigs. on the band: ZS6AL, LU7EF, HK4EA (harm.?), and J8CF, in Korea, are all good strength when conditions permit. VK3BQ reports AC4UU in Tibet. PY3BW and VO4LO well worth looking for. VK2GU has his 808's on 5 mx now, and the efficiency is identical with 10 mx. 2GU is keeping a constant watch, and with such an efficient outfit should break thru soon. From Africa, ZE1JU has a superhet on 5 mx, and is concentrating on that band; also K6MVX has an Ultra Sky Raider, and K6MVB a converter on 5 mx. F8JG is making daily transmissions on 56576 kc-cw from 1300 to 1310 GT, and also 1840' to 1810 GT using xtal control, 50 watts input to the final, feeding a vertical antenna. There are many G's also on 5 xtal controlled, G6YQ, G6JU, G6PG, G5LB, G5FN, G2GB, G2HG. Our best known and most consistent 10 mx Englishman, G6DH, has an automatically keyed, controlled, cw rig on 56000-56500 kc, 50 watts input, feeding a non-directional, horizontal antenna. During June he will be on daily, including Sundays, at these GM times—0900-0930, 1000-1030, 1100-1130, 1200-1230, 1330-1400, 1430-1500, 1530-1600, 1630-1700. Also, if conditions are extra good, the above schedule will be extended to 1700 and 1900 GMT. During the last month the VK's have been re-building—VK3YP is at present testing the Taylor T55, and finds it takes the watts and how!—hr at 3CP; the line up is now Philips EL3, TR1 tet, 80 mx xtal, 59 reg. doub. to 20 mx, 2.46's in P. Push doub. to 10, 801 buff-doub. to 5 mx, 801's in PP final. On phone the final is run class BC. VK3BQ has completely re-built his mod—24A, 6A6 phase inverter, PP45's, feeding thru a 20-ohm line to the 6L6 class AB stage; the quality leaves nothing to be desired. VK3CZ has the outfit going nicely; the grid

c. of the 800's is 50 mills with the antenna on! And the plate current dips from nearly 400 mills to 45 at resonance—what oh!! The best VK6 is 6MW, who has beautiful quality phone—usually r9 hr. VK5KO is experimenting with various beams fed thru 600 ohm lines—stacked vertical arrays—the two half-waves in phase with reflectors seem best on the States. The xmitter line up is 6A6-80 mx xtal, to 10 mx; 802 buff, T55 or 800 final. 5KO is qso W6ASH most days even later than 5.30 p.m. our time. W6ASH has an auto-keyed rig, running each five minutes after the hour. (We remember 3YP had several W. qso's from 10 p.m. onwards.) The two loudest phones from the States are W6ITH and W9TTB; the latter is using 59, tri-tet 40 mx xtal, RK25 doub. T55, 150T, final PP 300T's 1KW input!! The audio channel has a two-stage pre-amp; 6L6 class B thru 500-ohm line to 150 T's in class B. W6NAP, another r9 phone, has 53, co, 53 P-Push, RK23, 35T, 150T, mod. by class B838's. There are many high-powered ZL phones on also. ZL3KZ has 3.53's in a Jones exciter, 802, 60T, 150T final, 1-kw input-mod. has 6c5, 6c5, 6F6 PP, driving 211 PP to class B852's!! The antenna is a Reinartz Rotary Beam, on top of a 55-ft. pole, two receivers—HRO and ARC 175. ZL4AO has good phone, with 20 watts input, 40 watts cw, and is almost as strong as 3KZ. 4AO reports many grand Aurora displays, and finds, leading up to a severe one, that w sigs are r9 + all of the day; next day the band is absolutely dead! ZL4GM is an excellent phone (VK3FL designed the mod.) At present the rx is on 80 mx fed from a converter—2a7 and 56. The xmitter has 42 osc. from 80 xtal, 802 doub, 802 doub, PP 35T's final. Mod. has a 53 in cascade, 53 phase inverter, PP45's, class B 210's, 4 half waves in phase for the ant. system. At present the latest dx sigs. on 10 are K6MVB, K6NEK, W6CKR, W7EMP, W9TTB, W6ASH, around 4.30 p.m., and VU2CQ 9 p.m.

## Divisional Notes

### N.S.W. Division

W. G. Ryan, Secretary, VK2TI,  
Box 1734 JJ, G.P.O., Sydney.

#### Country Zone Officers.

Zone 1 (Far West).—J. Perooz,  
VK2PE, Hope Street, Bourke.

Zone 2 (North-West).—H. Hutton,  
VK2HV, Byron Street, Inverell.

Zone 3 (North Coast).—R. J.  
Berry, VK2NY, 54 Bacon Street,  
Grafton.

Zone 4 (Hunter River and Coal-  
fields).—S. Grimmer, VK2ZW, 161  
Tudor Street, Hamilton.

Zone 5 (South Coast and South-  
West).—R. Ross, VK3IG, 673 David  
Street, Albury.

#### GENERAL MEETING.

At the general meeting, held on  
18th April, a very interesting lecture  
was given by Mr. A. H. Llewellyn  
(VK2AH), the subject being "Tele-  
vision." Mr. Llewellyn has just  
returned from England, where he  
spent some time with the Baird Tele-  
vision Co. His presentation of the  
subject was thorough, and at the  
same time was easily understood, and  
he indicated what has been and is  
being done in England at present,  
as well as explaining the methods  
in use. Those present expressed great  
appreciation of the address.

#### W. T. S. CRAWFORD TROPHY.

The final for this trophy—a hand-  
some cup donated by W. T. S. Craw-  
ford, Esq., Senior Radio Inspector—  
was held at the Radio Inspector's  
office on the evening of Tuesday,  
4th May, being won by R. A. Priddle  
(VK2RA); with C. Fryer (VK2NP)  
and W. R. Nash (VK2WW) equal  
second.

The other finalists were:—A. J.  
Barnes (VK2CE), D. Dunn (VK2EG),  
E. Colyer (VK2EL), K. Wetze  
(VK2FK), L. Meyers (VK2KS), T.  
O'Donnell (VK2OD), K. Sherlock

(VK2TQ), R. Corthorn (VK2VG),  
A. McKenna (VK2WB), J. Cowan  
(VK2ZC), S. Grimmer (VK2ZW),  
and J. Howes (VK2ABS).

Mr. Crawford presented the trophy  
in the hope that it would act as an  
incentive towards better operating  
amongst the amateurs of N.S.W.,  
and at the conclusion of the final  
expressed himself as being very  
pleased with the general standard  
of operating shown, especially in the  
sending.

The Division desires to thank Mr.  
Crawford for his generosity in donat-  
ing the trophy, and also for the  
keen interest he has shown in arrang-  
ing the contest and practices in his  
spare time. The operating of Mr.  
Crawford during these periods was  
a model for all.

The trophy, together with the  
prizes won at the Radio Exhibition,  
will be presented by Mr. Crawford  
at the general meeting of the Divi-  
sion on 20th May.

It is to be hoped that every amateur  
in N.S.W. will make an effort to take  
part in the contest next year.

#### ZONE 2 NOTES.

(VK2HV.)

Ron 2RV presented his YL with  
a 224 mc. plate tank of gold studded  
with sparklers. Congrats from Zone  
2, but don't let it keep you off the  
air, Ron!

VK2WQ, of "Where it's Crook"  
(Werris Creek), has been very QRL  
of late, although a nice phone signal  
can be heard on 7007 KC when Bob  
has time for a nagchew.

VK2IB is inactive at present, and  
has not been heard from the Werris  
Creek QRA.

Arthur, of VK2ZP, has hopes of  
leaving the Royal Prince Alfred very  
shortly for Inverell and home. Guess  
he will stage a comeback to Radio  
and give Flying 99's.

VK2HV is attempting to keep sane  
and still build rotary beam antennae.

## Amateur Radio

Has been after phone W.A.C. on 12 watts with some measure of success. Do Africans work on phone? hi!

### ZONE 5 NOTES.

#### (VK2IG.)

VK2PF has a YL junior op. Congrats, Fred. The result is radio has been silent, although a little rebuilding has been in progress.

VK2TV had trouble driving a pair of 10's with a 45 doubler, but is now OK with another 45 buffer. Has doubts about his location, and is thinking of moving.

#### LAKEMBA RADIO CLUB—VK2LR. (Affiliated with the W.I.A.)

#### (By 2DL.)

The seventh annual reunion of the above Club, held at the Sunrise Hall, Canterbury, on 20th April, proved to be one of the most successful conducted by the Club.

In responding to the toast to the Radio Inspector's Department, Mr. H. K. Burbury conveyed the regrets of the Senior Radio Inspector, Mr. W. T. S. Crawford, at the latter's inability to attend. Mr. Burbury assured all present that his department was always willing to assist the amateur with any problems or enquiries which might arise. With regard to the authorised power for Australia, he stated that it was necessary to impose some limit, in fairness to all concerned.

Other speakers included Mr. P. Adams, 2JX (Fed. W.I.A.), Mr. H. Peterson, 2HP (W.I.A., N.S.W.), Mr. R. South (Australian Radio World), Mr. Haworth (Amalgamated Wireless Valve Co.), and Mr. McIntyre (Prices' Radio Service). At the conclusion of speeches, the usual trophies were presented by Mr. Burbury. The Chanex-Dulytic Cup (VK-ZL Contest) was won by VK2OI, the Slade Radio Cup (DX Contest) by 2KS, and the VK2UU Special DX Trophy by VK2AS.

At the annual election, the following were elected to hold office for the ensuing year:—President, Mr. E. Hodgkins, 2EH; Vice-President, Mr. J. Warren, 2QX; Hon. Secretary, Mr. G. Brown (unopposed); Treasurer,

Mr. H. Ackling, 2PX (unopposed); Publicity Manager, Mr. W. Phelps, 2DL (unopposed); QSL Manager, Mr. L. Hughes, 2QP (unopposed); Librarian, Mr. E. Hodgkins, 2EH (unopposed); W.I.A. Delegate, Mr. T. O'Donnell, 2OD (unopposed); committee of three, Messrs. Pinnell (2ZR), Taylor (2CL), and Clark (2IC).

In connection with the Sydney Amateur Radio Exhibition, 2OW was once again successful in winning first prize in the transmitting section. The exhibition was a great success, both from experimental and trade angles, and indications are that next year it will be conducted on a still larger scale.

### ULTRA HIGH FREQUENCY SECTION.

#### (By VK2VN.)

Owing to the big exhibition, activities during the past month suffered rather a lull, very few stations being active on the 56 mc band.

Most of the usual enthusiasts had their time taken up with exhibition work and in preparing their gear.

Although there was not a great deal of U.H.F. gear on show, what there was was deserving of high merit for construction and efficiency.

Possibly the exhibits which attracted most attention were 2MQ's crystal-controlled transmitter and 2EM-2NO's very efficient receiver.

The transmitter uses an 80-metre crystal and six 6L6's as doublers and buffers, with a pair of 801's in the final, the whole being built in rack and panel style.

As regards the receiver, the main feature is the 956 RF stage. This tube gives remarkable amplification.

The activities of the section at the exhibition were the two-way communication between the Town Hall and a car fitted with transmitter and receiver touring the streets.

The screening caused by the buildings caused many a headache, but suitable spots were chosen where satisfactory communication could be established.

Reports on transmissions from both fixed and mobile stations were

received from outlying suburbs. The U.H.F. gear, when in operation, never failed to attract a large gathering.

At the last meeting, 27th June was set aside as the next Field Day. Tentatively the arrangements are that an attempt is to be made to bridge Port Kembla and Port Stephens, a distance of about 120 miles, mostly over the water. In addition, intermediate stations along the coast will be in operation, and high-power transmitters with accurately directed beams will be used at both ends.

ICW and fone is to be used, so that those stations using superhets will have an excellent opportunity of proving their superiority.

In concluding, all States will be circularised as soon as final details are available.

## RADIO EXHIBITION.

The Division's second annual Amateur and Short-wave Radio Exhibition was held at Sydney Town Hall from 3rd May to 8th May, inclusive. The interest taken in the Exhibition by trade, press and public was very gratifying, as also that of the P.M.G.'s Department.

The Exhibition was opened, in the presence of a large gathering, by Professor Eugene C. Woodruff, President of the I.A.R.U. and A.R.R.L., who spoke from America via W2XAF. During the course of his opening address he extended to the Division the best wishes of the two bodies of which he is President, and also congratulated the amateurs of Australia on attaining a measure of self-government in the form of Vigilance Committees.

Mr. (now Sir) Ernest T. Fisk, Chairman of Directors of A.W.A., then spoke from England, and thanked Professor Woodruff on behalf of the Institute.

Mr. J. S. Duncan, Deputy-Director of Posts and Telegraphs in N.S.W., also addressed the gathering, and spoke in warm terms of the mutual good feeling which existed between the Institute and the P.M.G.'s Department. He also congratulated the Division on being such a live body, and on the excellence of the exhibits.

Our thanks are due to the above-mentioned gentlemen, and also to the General Electric Co. of America, who broadcast Professor Woodruff's address, through W2XAF, to Amalgamated Wireless (A'sia) Ltd., who placed VK2ME at our disposal for the replies, and also to the Australian Broadcasting Commission, which broadcast the opening proceedings through 2BL and national stations.

As a display of gear the Exhibition was an outstanding success, the standard of the exhibits being very high indeed, so much so that in some sections additional prizes were awarded. Prize-winners in the various sections are as follow:—



A portion of the Amalgamated Wireless Valve Company's stand, displaying the well-known Radiotron product.

1. Best complete stall exhibit for clubs affiliated with the W.I.A. (Wireless Weekly" Cup).—Waverley Radio Club, 1; Lakemba Radio Club, highly commended.
2. Best apparatus on Club stand.—A. Furze (VK2HF), Manly, transmitter, 1; G. Wells, Waverley, oscillograph, 2; G. Patterson, Waverley, Morse key, 3.
3. Most efficiently designed and correctly built multi-band transmitter (individual exhibition).—B. Dimmock (VK2OW), 1; J. Howes (VK2ABS), 2; A. Furze (VK2HF), 3.
4. Special prize for transmitter showing originality and economy in design.—Manly Radio Club, (VK2MR).



5. Most efficiently designed and correctly built amateur receiver.—A. Preston-Smith (VK2QK), 1; H. Clay (VK2UY), 2; C. Bischoff (VK2LZ) and B. Glassop (VK2BG), equal, 3.

6. Most compact and complete portable station (including UHF apparatus and transceivers).—C. Fryer (VK2NP), 1.

7. Ultra-high frequency receiver.—A. Sutton (VK2EM), 1; W. Smith, 2.

8. Ultra-high frequency transmitter.—W. McGowan (VK2MQ), 1; C. Winch (VK2IF), 2.

9. Best piece of apparatus (excluding apparatus and components eligible for other sections)—E. Spicer, microphone, 1; J. Cowan (VK2ZC), oscilloscope, 2; G. Wells, oscilloscope, 3; C. Bischoff (VK2LZ), testing equipment, 4.

10. Dual or all-wave receiver (home-constructed).—C. Brigden, 1.

The trade exhibits were of interest to amateurs and to short-wave listeners, and most of the stands had working exhibits, which attracted a great deal of attention. The exhibit of the P.M.G.'s Department was also very instructive and interesting.

A feature of the Exhibition was the work carried out between two 56 mc. stations located in the hall and a mobile station in a car travelling about the city. On the lower frequencies, reception conditions were very bad in the hall, due to electrical interference, so two-way communication was difficult, but in spite of these difficulties, quite a few successful contacts were made.

Altogether the Division has every reason to be pleased with its efforts, and our thanks and congratulations are due to the Secretary, W. G. Ryan (VK2TI), and organising committee—H. P. Peterson (VK2HP), W. M. Moore (VK2HZ), D. B. Knock (VK2NO), J. Moyle (VK2JU), P. Adams (VK2JX), and F. M. Goyen (VK2UX)—who worked very hard

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Our 1937

## Illustrated Catalogue

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**PRICE'S RADIO SERVICE** D. G. MCINTYRE  
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to make the Exhibition such a success. Mention should also be made of the displays and organising of the Radio Clubs.

## MANLY RADIO CLUB NOTES. (VK2MR.)

All the boys are elated over the result of their effort at the W.I.A. Exhibition. Manly secured three firsts, a second, a third, and the special for the Club's transmitter, which speaks well for our constructors.

Since the introduction of our regular Morse class, it is surprising how many of our chaps can now copy at fair speed, and several new students have joined up, but have had to be classed separately. The great problem of "swotting" up the regulations and the handbook is being tackled seriously at the present time, as it is expected to place a few more names on the ham list shortly.

Preparations are being made to alter the colours of our Club from black and white, as also our ensign, which will be something worth looking at.

Work on UHF has not been too brisk lately, owing, no doubt, to the fact that other clubs and hams take fits and starts, and there does not seem enough enthusiasm to keep the ball rolling. We would be very pleased if some of those five-metre fans would drop us a line occasionally, making a sked any week-end, and thereby bring this band regularly on the air instead of overcrowding the lower frequencies. What about it, fellers?

All correspondence to this Club should be addressed to the Secretary, 71 Lawrence Street, Harbord.

R. L. LE MAINE,  
Hon. Sec.

## Victorian Division

### VICTORIAN KEY NOTES.

(By VK3DP.)

Sorry there were no notes in last issue, but the fault is mainly due to yourselves for not letting me know of your activities. So don't forget

to shoot along any news of interest. Much appreciated.

Well, there was quite a fair crowd at the May meeting, including Mr. Thompson and a visitor from N.S.W., VK2BP. 2BP was given a hearty welcome, and afterwards gave a short talk on VK2 doings. He is mostly interested in the U.H.'s.

Last month it was suggested that the QSL cards be distributed to financial members only. Council have given 3RJ a free hand to arrange the distribution as he thinks fit, and so not to make any more work for himself. Council also reports that they are very pleased at the interest taken by this section on the doings of the Council. This led to the attendance of Mr. Thompson, who gave a very comprehensive description on what took place at the February convention. Several points were cleared up, so everybody was happy. A motion was moved that Council be asked to acquire a Cathode Ray tube for addition to the library. There was a lengthy discussion on whether its use would warrant its purchase. Most favoured the idea, so the motion was passed.

Sorry to relate that 3MR, our Council representative, is not in the best of health. "Snow" has been ill for some weeks now, and we all wish him speedy recovery. Someone was heard to remark that it was through sitting up all night on DX, and suggested burning down the shack.

### WESTERN DISTRICT NOTES.

(By 3HG.)

3RH.—Is on the air again, having had his generator rewound after it burnt out some time ago. Intends testing on 56 M.C. with 3HL.

3HM.—Doing a little on 28 M.C.

3HQ.—Marj. has taken up gardening!

VK3SG is going to Central Australia with an expedition this month. New call will be VK8DA. So now is your chance to hook a VK8. Mostly on 7 mc at 2100 E.S.T.

3KP.—Leaving for Europe in July, and all wish him a swell time.

## Amateur Radio

3CB.—Active on 7 mc, but still has a sneaking regard for 200 mx. Visiting VK2 on 14th June.

3JD.—Just built 8-tube super, and building new final stage on xmitter.

3LA.—Hooked OA4AQ for WAC.

3XR.—Having trouble with his 5-tube super.

3HC.—First meeting for six months. Is toying with the idea of coming back on the air.

3RX.—Now settled in Toorak, permanently, he hopes. He paid a visit to the local B.C.L. neighbour, and his personality was such that he came away with permission to erect a 40-footer in their back yard. What a man!

3ZO.—Rebuilding new rig, and hopes to be perking shortly.

3UH.—Just installed a Taylor T55 tube, and the output is twice that of his 800.

3DM.—Busy rebuilding.

3SA.—Soon be on xtal controlled.

3YO.—Heard on again with funk fone. Golf must be on the shelf.

3TW.—Very popular with the 7 M.C. phone gang, his phone being quite good except for some A.C. in the carrier, from the converter.

3CK.—Seems satisfied to stick on 7 M.C. in spite of the QRM and being handicapped by low power. Says there is no one to work on C.W. on 3.5 M.C.

3FA.—Has not been heard for some time.

3SE.—Put his rig on 3.5 M.C., and works the gang on that band.

3OW.—Installed a 6L6 C.O., and is very pleased with the harmonic output, but, during tests, his 7 M.C. crystal went west!

3HG.—At last has new receiver perking. Is thinking of a 626 or 807 for transmitter, also directional antenna for 14 M.C.

3GA.—On 7 M.C., but his signal is not a 1937 signal.

3XU.—Is now on phone, but the quality is far from good as yet.

3BU.—His 7 M.C. phone is quite good, and very strong.

### MALLEE AND NORTHERN DISTRICT.

(3ZK——3HX.)

Conditions during the month have not been the best at all, mostly due to unsettled weather conditions. Static has been prevalent, much to the annoyance of various operators.

The main feature of the month was the marriage of 3OR, who has gone and done it. Congrats, Murray.

3KR.—Still continues to work DX, like eating his dinner. Ken has a dud 6L6 in his speech amp!

3TL.—Has been on all bands during the month, but is not satisfied with his rig, so intends making sundry alterations.

3OR.—Has not been very active, but we hope to hear Murray early in the month, if he still lives.

3TS and 3FF.—Not very active, as Tow and Jock are busily installing an AC generator and re-building the gear.

3BM.—Has not been heard very much.

3KI.—Makes an appearance occasionally.

3WN.—Also not very active, but is on now and again.

3HR.—Another missing member. Charlie has been having some trouble with the rig, and threatens to rebuild.

3CE.—Has had headaches over a new speech amp.

3IH.—Playing round with speech amplifiers in preparation for fone operation. Line up, CC1, CC1 PP CL4's.

3EP.—Has been working Yanks on 14 mc, besides causing QRM on 3.5 mc.

3NN is making a few alterations to antenna and the coupling to it.

**3ZK.**—Is very worried with the operation of the speech amp; wants hi-fidelity; suffered a visit from 3HX.

**3HX.**—Trying out new car visiting some of the gang, and contemplates certain changes.

## South Australian Division

(By VK5KL.)

With the new financial year begun and all offices filled, the outlook for the next twelve months looks bright indeed. Mr. Marshal Hyder has been elected President of the South Australian Division, and his able assistance as Secretary for the past few years can well be remembered. The other council members are as follows:—Mr. Coulter (5MC), Secretary; Mr. Walker (5WW), Treasurer; Mr. Pearn (5PN) Country Members' Representative; Mr. Cheel (5CR), Students; Mr. Briggs (5BD), Publicity Officer; Mr. Luxon (5RX), QSL officer, and Mr. Lloyd (5HD).

The above members are very enthusiastic, with new ideas that will benefit the Institute, and I'm sure as the year progresses the value of their ideas will be demonstrated.

### Transmitters' Section.

Mr. Pearn (5PN) was re-elected chairman, with Mr. Lloyd (5HD) secretary. The gathering at this meeting has dropped off. How about it, chaps? Come along!

### U.H.F. Section.

The attendance has been steadily increasing, and this section has the distinction of being the only one to provide supper now at the meetings for the members present.

### Students' Section.

This year the council has gone to the full, and with the fee set at £2 10s. a course, the agenda for the year is the best and most impressive that has been offered for years. Mr. Bourne (5BU) has control of the lectures, with Mr. Cheel (5CR) assisting with code practice. The class consists of 22 members.

### Technical Development Section.

Members in this section are very

busy building new equipment for the Institute's official station, VK5WI. With many new devices, the service for frequency checks will be right up to the minute when the station next appears on the air.

### Country Members.

In future "Amateur Radio" will be included in your subscriptions for the year. Surely this will be appreciated. Mr. Pearn (5PN) operates every Sunday morning on 40 metres with a view to giving you the latest news of the Institute. Listen out for him. If not, write; he will appreciate your views, which may aid and benefit you.

## Tasmanian Division

(By VK7JB.)

The annual meeting was the topic of discussion at the May meeting of this division, and it was decided to hold it at the Ship Hotel, Hobart, instead of Campbell Town, as originally intended. Nominations for the council were received, and also a notification from the President (7JH) that he has reconsidered his decision not to seek re-election, and will stand again for the council and office of president.

At the meeting of the council it was proposed to hold an exhibition of hobbies in conjunction with other bodies interested, in the near future. Members of the Model Engineering Club are very keen to co-operate, and judging by the public interest displayed at exhibitions of a like nature recently, it should be a success.

### Members' Activities.

**7YL.**—Not satisfied with working dx on CW, and now using fone with them. Latest additions are CO7CX, W6BKY, and a W4 on fone, and a G6 on CW.

**7KV.**—Installed an 807 as a buffer amp, and says it is a very F.B. tube, requiring very little drive, and very handy for 28 mc. work.

**7JH.**—Reports dx very quiet lately, only W's to work. (Same here, Jack, om.)

## Hilco Transformers

Attention of Hams is directed to the advertisement in this issue from the big factory of Hilco Transformers Pty. Ltd., 97-111 Berkeley Street, Carlton, Melbourne. This concern specialise in the manufacture of transformers for all electrical purposes. The best technical knowledge and a high order of organising ability have spelt success, and because of the most careful attention to every detail in the complicated story of manufacture, the company is able to give a twelve months' guarantee of continuous performance or replacement covering every transformer produced. After many expansions and removals, the premises to-day comprise eight frontages of offices and workshops, wonderfully equipped throughout, and still further extensions are in view. All classes of transformers are manufactured and serviced, from the smallest to the largest, and meticulous care throughout is exercised. The Hilco transformers have earned an enviable reputation on performance, and it would be well worth the time for any Ham to visit the works, where he will be assured of a hearty welcome.

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Owing to lack of space the "Perfect Station" article, part 2, has been held over until next month.

\*\*\*\*\*

## New Stock Arrivals

Recent shipments of Eddystone components have brought the stocks up to the budgeted level, and supplies of all the 48 lines are now available. Amongst the newer lines are two special dials. No. 1070 is a Full Vision Dual Speed Dial of the airplane type that does not require anything more than a  $\frac{1}{2}$ -in. hole in the panel for mounting, and has a ratio of 100-1 and 20-1. Net price, 18/-. The Precision Slow Motion Dial No. 1069 is a high-grade dial with a slow motion ratio of 6:1. It provides an accurate and powerful drive for high-class test and laboratory equipment. The 4-in. scale is silver-plated brass, and has machine-cut graduations, which are read against a separate cursor line indicator fixed to the panel of the equipment. Net price, 25/3.

No. 1068 is a split Stator Condenser for frequency meters, receivers and laboratory equipment, which provides the choice of three different maximum capacities according to the way in which it is used. It is a solidly built component, with heavy brass vanes and Frequentite insulation.

Connection to the rotor shaft is made via a screened non-inductive pigtail. Minimum capacity formed by the rotor, and one side, is 5 m.mfd, and the maximum capacity 40 m.mfd. With the two side in parallel, the minimum capacity is 10 m.mfd, maximum 80 m.mfd. When used as series gap condenser minimum capacity is 3 m.mfd and the maximum 20 m.mfd.

## Important Announcement!

We have been appointed Victorian Distributors for Eddystone Short Wave Equipment, a full range of which is now on view. An invitation is extended to Hams to inspect.

Call or write for illustrated Catalogue.

A further Limited Shipment of 6L6's IN GLASS has arrived and is now available at 22/6. Also a number of 46 Valves, 4/6 each. ISOLANTITE SOCKETS, 4, 5, 6 & 7 pins 2/-; 8 pins 3/3

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Special prices to hams

(Continued from Page 17)

in the Powers household. The congratulations of all your fellow members to Mrs Powers and yourself 3D4.

## Sixth District.

(By 6Z1—6LJ.)

VMF is anxiously awaiting the result of the Bullsbrook aerodrome when it becomes occupied by both planes and staff. New members are also on their toes ready for a kick-off, when comparatively big things will be on the go in VMF. 6B1, at Kalgoorlie, is as regular as clockwork, at all watches, and has a high procedure efficiency. 6A5, at Geraldton, is another asset to this district; as well as being in a valuable country centre, is also well up in ability. 6A6, who was at Katanning, has shifted to Perth, and is not quite ready for activity. 6A1 and 6A2, two new members, are getting things in good form for their entrance to the Reserve. 6Z2 is another one who is contemplating a change of address, but is too busy dashing around the country to attend watches. He is away for practically every alternate week-end. Interstate watches have been resumed by 6Z1, and watches with other States will be welcomed.

The support given to the N.S.W. Division's technical article contest prize has not been up to expectations so far. There are only a couple of months left to send in entries. Better get busy right away.

## Hamads

Advertising space in these columns is available to those wishing to sell, buy or exchange, at 3d. per line; approximately five words to the line. Minimum charge, 1/-. To ensure insertion enclose postal note or stamps with copy, and address to the Advertising Manager, "Amateur Radio," White Horse Road, Box Hill, E.I.L., Victoria.

**B**OUND Volumes of "QST." for 1931 and 1932. Loose Volumes of "QST." for 1933, 1935, 1936.

Electron Coupled Freque-meter Monitor, with built-in power pack.

T.R.F. Receiver and Weston 0.3 R.F. Ammeter, as advertised in April issue.

Two T.C.C. Condensers, 1500 volt working, 1.0 mfd.

Two T.C.C. Condensers, 1500 volt working, 2.0 mfd.

Various types of Filament Transformers. 1500 volt centre tapped, 300 milliamp power Transformer. 2000 volt centre tapped, 300 milliamp power Transformer.

Pair RCA 281 Rectifier Tubes, in good order.

One 866 Mercury Vapour Rectifier, never been used.

Weston A.C. Voltmeter, model 476, 0.15 volts.

Angle iron, welded, Relay Rack, 20" x 16" x 6 feet, with panels.

All the above gear for unreserved sale, and no reasonable offer refused. Books and gear all in good order, mostly as new. D. C. McDonald, VK3DM, 16 Railway Avenue, Malvern, S.E.4, Victoria.

## MILLFORD RADIO CO.

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## Amateur Radio

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517 Lower Malvern road, Glen Iris, S.E.6. Crystals ground from best Brazilian Quartz and tested to 50 watts input to penthode oscillator, as used by leading experimenters and DX Stations, accuracy plus or minus 3 KC's, 200, 160 metre, 15/-; 80 metre, 10/-; 40 metre, £1/5/-; 465 KC, xtal gates, £2; Plug-in type holders, 7/6 each. Power Transformers constructed to specifications. Filament transformers, up to six windings, 15/6. Receivers and Transmitters constructed. Super-Hets aligned. Triad first quality 866-Mercury Vapour Rectifiers, 7500 volts peak, £1/1/-. National Type, N dials, £2 each. Taylor T55 Triode Transmitting Tube, 55 watts plate dissipation, 170 watts RS output on all frequencies up to 30 MC's. Price, £4/4/- each. Call or write above address. Satisfaction guaranteed.

**BUY A.C. DX. Receiver, Super TRF, or Autodyne, and/or Valves, Speaker and Power Supply. Write VK3BG, 11 Mitchell St., Bendigo.**

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**XTALS** by W9ADN, 80 at £1; 40 BT £1; RF Chokes by ON4DJ, 10/200 MX 175 MA, 2/11; 5MX, 2/-; BUGS, as Vibro, steel base, 35/-. KEYS, as P.O, nickel-plated, 15/-. VK3RJ, 23 Landale St., Box Hill, Vic.

## QSL CARDS . . .

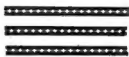


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No. 964—6 pin ..	1/6 ea.
No. 1002—6 pin, plain ..	8/11 ea.
No. 1003—6 pin, threaded ..	4/- ea.

Rebuilding time is about to come around once again. We all find many things to do in the winter nights that are put aside during peak DX periods. The past year has produced a number of new tubes and layouts, and before rebuilding we must first consider which are to be used. For transmitting, the beam tubes are definitely the order of the day. The 6LG can be used from the C.O. to the P.A. The 807 makes a bonny doubler and amplifier; whilst the 808 performs the duty of a final amplifier with no mean performance.

Receivers have likewise progressed in efficiency, especially since "Eddystone" components were marketed in Australia. Low-loss dielectric insulation, noiseless condensers, high "Q" coil formers, and, generally speaking, higher efficiency gear that one finds in "Eddystone" products, have contributed greatly to increased receiver performance.

Before rebuilding, just take a look at the "Eddystone" Catalogue and see for yourself the vast number of lines that you could well do with. For instance, there is the short wave coil former made with 4 or 6 pins, threaded or plain, made with D.L.9 dielectric material—and the pins are spirally split, too. The chassis type coil bases provide POSITIVE grip for the pins, and are so made that flux or dirt cannot cause leakage or dirt between the pins. There are other sockets for top panel mounting, too, when the formers are used in transmitters.

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